II. Rejection of Claims 9 and 10 Under 35 U.S.C. § 101

The Action first rejects claims 9 and 10 under 35 U.S.C. § 101, as allegedly drawn to non-statutory subject matter. Applicants respectfully traverse.

The Federal Circuit recently emphatically confirmed that "anything under the sun that is made by man" is patentable (*State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 47 USPQ2d 1596, 1600 (Fed. Cir. 1998), citing the U.S. Supreme Court's decision in *Diamond vs. Chakrabarty*, 206 USPQ 193 (S.Ct. 1980)). Furthermore, as the Office has issued **thousands** of patents directed simply to "host cells", Applicants submit that claims 9 and 10, which is also directed to a host cell, **must** be statutory. Specifically, on June 22, 2004 **alone**, six days before the Action was issued, the Office issued U.S. Patent Nos. 6,753,163, 6,753,176, 6,753,177, and 6,753,419, each of which has at least one claim directed to "a host cell". Therefore, the rejection of claims 9 and 10 as non-statutory is arbitrary and capricious, and cannot stand.

Furthermore, the Examiner states that claims 9 and 10 are non-statutory because "(i)t is noted that 'gene therapy' is contemplated" (the Action at page 2). Applicants respectfully point out that gene therapy, *per se*, is **NOT** non-statutory, and therefore the Examiner's argument concerning the present rejection is completely improper. Finally, should the Examiner have instead meant to say that transgenic animals are contemplated, and that human transgenics are non-statutory, Applicants respectfully point out that at page 19, line 12, the present specification specifically contemplates "non-human primates" as transgenic animals, and thus specifically disclaims human transgenic animals. Therefore, basing the present rejection on such reasoning would also be improper.

Applicants therefore request that the rejection of claims 9 and 10 under 35 U.S.C. § 101 be withdrawn.

III. Rejection of Claims 2-4 and 8-10 Under 35 U.S.C. § 101

The Action first rejects claims 2-4 and 8-10 under 35 U.S.C. § 101, as allegedly lacking a patentable utility. Applicants respectfully traverse.

As pointed out by the Examiner in the Action at page 3, the presently claimed sequence has clearly been described by Applicants as sharing "structural similarity with mammalian ion channel proteins" (the specification at page 2, lines 2-3). Applicants respectfully point out that the presently claimed sequence shares greater than 99% identity at the amino acid level over nearly the entire length of SEQ ID NO:5 with a sequence that is present in the leading scientific repository for biological

sequence data (GenBank), which has been annotated by independent third party scientists *wholly unaffiliated with Applicants* as "Homo sapiens potassium channel tetramerisation domain containing 7 (KCTD7)" (GenBank accession number NM_153033, alignment provided in **Exhibit A**). Furthermore, Applicants respectfully point out that the role of the tetramerization domain in voltage gated potassium channels has long been known to those of skill in the art, as evidenced by numerous scientific publications, exemplified at least by the publications of Yi *et al.*, *Proc. Natl. Acad. Sci. USA* **98**:11016-11023, 2001 (**Exhibit B**) and Strang *et al.*, *J. Biol. Chem* **276**:28493-28502, 2001 (**Exhibit C**). Example 10 of the Revised Interim Utility Guidelines Training Materials (pages 53-55; **Exhibit D**), which have been set forth by the United States Patent and Trademark Office ("the USPTO"), clearly establishes that a rejection under 35 U.S.C. § 101 as allegedly lacking a patentable utility, and under 35 U.S.C. § 112, first paragraph, as allegedly unusable by the skilled artisan due to the alleged lack of patentable utility (see Section IV, below), is not proper when a full length sequence (such as the presently claimed sequence) has a similarity score greater than 95% to a protein having a "well established utility". Therefore, as the present situation **exactly** tracks Example 10 of the Revised Interim Utility Guidelines Training Materials, the USPTO's **own** examination guidelines clearly indicate that the present claims meet the requirements of 35 U.S.C. § 101 and 35 U.S.C. § 112, first paragraph (see Section IV, below), and the present rejection of claims 2-4 and 8-10 should be withdrawn.

It has been well established that Applicants need only make one credible assertion of utility to meet the requirements of 35 U.S.C. § 101 (*Raytheon v. Roper*, 220 USPQ 592 (Fed. Cir. 1983); *In re Gottlieb*, 140 USPQ 665 (CCPA 1964); *In re Malachowski*, 189 USPQ 432 (CCPA 1976); *Hoffman v. Klaus*, 9 USPQ2d 1657 (Bd. Pat. App. & Inter. 1988)), and, thus, any questions concerning whether or not the present claims meet the requirements of 35 U.S.C. § 101 should have been laid to rest. Nevertheless, Applicants point out that the present invention has a number of other patentable utilities, not the least of which is in forensic biology, as described in the specification, at least at page 3, line 15. As described in the specification at page 18, lines 8-17, the present sequences define a number of coding single nucleotide polymorphisms, including: a C/A polymorphism at nucleotide position 34 of SEQ ID NO:4, which can result in an arginine or serine residue at corresponding amino acid (aa) position 12 of SEQ ID NO:5; a C/T polymorphism at nucleotide position 98 of SEQ ID NO:4, which can result in a proline or leucine residue at aa position 33 of SEQ ID NO:5; and a G/T polymorphism at nucleotide position 235 of SEQ ID NO:4, which can result in an alanine or serine residue at aa position 78 of SEQ ID NO:5. As such polymorphisms are the basis

for forensic analysis, which is undoubtedly a "real world" utility, the presently claimed sequence must in itself be useful. Thus, the present claims clearly meet the requirements of 35 U.S.C. § 101.

The Examiner questions this utility, stating that "not a single specific disease state ... [is] relate[d] to the encoded polypeptide of SEQ ID NO:5" (the Action at page 3). First, Applicants respectfully point out that the identification of a "specific disease state ... relate[d] to the encoded polypeptide of SEQ ID NO:5" is not the standard for patentability under 35 U.S.C. § 101 (*In re Brana,* (34 USPQ2d 1436 (Fed. Cir. 1995)). Second, Applicants respectfully point out that the use of the presently described polymorphisms in **forensic** analysis does not require the identification of any "specific disease state ... relate[d] to the encoded polypeptide of SEQ ID NO:5". One aspect of forensic analysis is to distinguish individual members of the human population from one another based solely on the **presence** or **absence** of a polymorphic marker, such as the presently described polymorphisms. As polymorphic markers such as the presently described polymorphisms have been used in forensic analysis for decades, this is clearly a well established technique, and as such, specific guidance does not need to be provided in the present specification, for it has long been established that a patent need not disclose what is well known in the art (*In re Wands*, 8 USPQ 2d 1400 (Fed. Cir. 1988)). This is also not a case of a "putative" (the Action at page 3) utility. Using the polymorphic markers exactly as described in the specification as originally filed, the skilled artisan can actually distinguish individuals from one another. Applicants point out that in the worst case scenario, each marker is useful to distinguish 50% of the population (in other words, a marker being present in half of the population). This is an inherent feature of any polymorphic marker, as the largest percentage of a population that two polymorphic markers can define is 50% each. If a polymorphic marker is present at a level of less than 50%, then that marker is even **more** informative, *i.e.*, a **greater** percentage of the population can be distinguished on the basis of the marker. Nevertheless, the ability to eliminate even 50% of the population from a forensic analysis clearly is a real world, practical utility. Therefore, any allegation that the use of the presently described polymorphic marker is only potentially useful would be without merit, and would not support the alleged lack of utility.

The Examiner next states that "one cannot reasonably extrapolate what constitutes a specific utility for the polynucleotide of SEQ ID NO:4" (the Action at page 3), and thus the present invention "has no 'substantial utility'" or "'real world' utility" (the Action at page 4). Applicants respectfully point out that naturally occurring genetic polymorphisms such as those described in the specification as originally filed are both the basis of, and critical to, *inter alia*, forensic genetic analysis intended to

resolve issues of, for example, identity or paternity. Forensic analysis based on polymorphisms such as those identified by Applicants is used to positively identify or rule out suspects in many criminal cases, and in identifying human remains. Paternity determination is based on polymorphisms such as those identified by Applicants to positively identify or rule out individuals suspected of fathering a particular child. What could be possibly be more "substantial" and "real world" than the loss of an individual's freedom or life through incarceration? What could be possibly be more "substantial" and "real world" than the positive identification of human remains? What could be possibly be more "substantial" and "real world" than the impact, both economic and emotional, that the results of a paternity analysis has on the individuals directly and indirectly involved? These are all well known and generally accepted uses of polymorphisms such as the polymorphisms identified by Applicants. Without such identified polymorphisms, the skilled artisan would not be able to carry out such forensic or paternal analyses. Therefore, as the use of the presently described polymorphic markers in forensic analysis is clearly a "substantial" and "real world" utility, the presently claimed sequences meet the requirements of 35 U.S.C. § 101.

The Examiner next states that "further experimentation is necessary at the time of filing the instant invention to attribute and discover a 'real world' utility" (the Action at page 4). Applicants reiterate that the use of the presently described polymorphic markers in **forensic** analysis, as detailed above, does not require the skilled artisan to identify a "specific disease state ... relate[d] to the encoded polypeptide of SEQ ID NO:5", and in fact requires **no** "further experimentation". The presently described polymorphisms can be used to distinguish individuals from one another in their presently available form. Furthermore, Applicants note that the proper standard for meeting the requirements of 35 U.S.C. § 101 is **not** whether "further experimentation" is required to practice certain aspects of the claimed invention, but whether **undue** experimentation would be required to practice the claimed invention. The widespread use of polymorphisms such as that described by Applicants in forensic analysis every day **strongly** argues against such a use requiring "undue experimentation". Applicants reiterate that in assessing the question of whether undue experimentation would be required in order to practice the claimed invention, the key term is "undue", not "experimentation". *In re Angstadt and Griffin*, 190 USPQ 214 (CCPA 1976). The need for some experimentation does not render the claimed invention unpatentable. Indeed, a considerable amount of experimentation may be permissible if such experimentation is routinely practiced in the art. *In re Angstadt and Griffin, supra*; *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*,

18 USPQ2d 1016 (Fed. Cir. 1991). Thus, the Examiner's argument once again does not support the alleged lack of utility, and the present claims clearly meet the requirements of 35 U.S.C. § 101.

The Examiner goes on to state that because "many polynucleotides may be useful ... for 'RFLP analysis', and because many genes are putatively important in 'diagnosis' ... no 'specific' utility exists" (the Action at page 3). Applicants first point out that not all nucleic acids contain polymorphic markers. In fact, the basis for forensic analysis is the fact that such polymorphic markers are not present in all other nucleic acids, but in fact specific and unique to only a certain subset of the population. Second, until a polymorphic marker is actually described it cannot be used in forensic analysis. Put another way, simply because there is a likelihood, even a significant likelihood, that a particular nucleic acid sequence will contain a polymorphism and thus be useful in forensic analysis, until such a polymorphism is actually identified and described, such a likelihood is meaningless. Third, the Examiner appears to be confusing the requirement for a specific utility, which is the proper standard for utility under 35 U.S.C. § 101, with the requirement for a unique utility, which is clearly an improper standard. As set forth by the Federal Circuit in *Carl Zeiss Stiftung v. Renishaw PLC*, 20 USPQ2d 1101 (Fed. Cir. 1991; "*Carl Zeiss*"):

> An invention need not be the best or only way to accomplish a certain result, and it need only be useful to some extent and in certain applications: "[T]he fact that an invention has only limited utility and is only operable in certain applications is not grounds for finding a lack of utility." *Envirotech Corp. v. Al George, Inc.*, 221 USPQ 473, 480 (Fed. Cir. 1984)

Following directly from the quote above, an invention does not need to be the only way to accomplish a certain result. Thus, the question of whether or not **other** nucleic acid sequences contain polymorphic markers and can thus be used in forensic analysis is completely irrelevant to the present utility inquiry. The **only** relevant question in regard to meeting the standards of 35 U.S.C. § 101 is whether **every** nucleic acid can be so used - and the clear answer to this question is an emphatic **no**. Importantly, the holding in the *Carl Zeiss* case is mandatory legal authority that essentially controls the outcome of the present case. This case, and particularly the cited quote, directly rebuts the Examiner's argument. Furthermore, the requirement for a unique utility is clearly not the standard adopted by the USPTO. If every invention were required to have a unique utility, the USPTO would no longer be issuing patents on batteries, automobile tires, golf balls, golf clubs, and treatments for a variety of human diseases, such as cancer and bacterial or viral infections, just to name a few particular examples, because examples of each of these have already been described and patented. All batteries have the exact same utility - specifically, to provide power. All automobile tires have the exact same utility - specifically, for use on

automobiles. All golf balls and golf clubs have the exact same utility - specifically, use in the game of golf. All cancer treatments have the exact same utility - specifically, to treat cancer. All anti-infectious agents have the exact same broad utility - specifically, to treat infections. However, only the briefest perusal of virtually any issue of the Official Gazette provides numerous examples of patents being granted on each of the above compositions every week. Additionally, if a composition needed to be unique to be patented, the entire class and subclass system would be an effort in futility, as the class and subclass system serves solely to group such common inventions, which would not be required if each invention needed to have a unique utility. Thus, the present sequence clearly meets the requirements of 35 U.S.C. § 101.

With regard to the utilities set forth in the specification as originally filed the Examiner attempts to **narrowly** define the "generic" class of the invention to include **only** those members that share the asserted utility, and then state that the asserted utility is "generic". Applicants respectfully point out that the "generic" class with regard to the present invention is **all** nucleic acids. Applicants reiterate that **not** all nucleic acids contain polymorphisms. Therefore, the question of whether the asserted utility is "specific", as opposed to "generic", has **clearly** been laid to rest. Applicants note that the "generic" class of the invention cannot be redefined to include **only** those nucleic acids that contain polymorphic markers, as the Examiner is forced to do in order to support the allegation that the claimed nucleic acids lack a patentable utility. Thus, the Examiner's argument is completely improper and in clear defiance of established case law, and therefore is in no way whatsoever sufficient to overcome Applicants' assertion of utility. Therefore the present claims are clearly in compliance with 35 U.S.C. § 101.

Furthermore, as the presently described polymorphisms are a part of the family of polymorphisms that have a well established utility, the Federal Circuit's holding in *In re Brana*, (*supra*, "*Brana*") is directly on point. In *Brana*, the Federal Circuit admonished the Patent and Trademark Office for confusing "the requirements under the law for obtaining a patent with the requirements for obtaining government approval to market a particular drug for human consumption". *Brana* at 1442. The Federal Circuit went on to state:

> At issue in this case is an important question of the legal constraints on patent office examination practice and policy. The question is, with regard to pharmaceutical inventions, what must the applicant provide regarding the practical utility or usefulness of the invention for which patent protection is sought. This is not a new issue; it is one which we would have thought had been settled by case law years ago.

Brana at 1439, emphasis added. The choice of the phrase "utility or usefulness" in the foregoing quotation is highly pertinent. The Federal Circuit is evidently using "utility" to refer to rejections under

35 U.S.C. § 101, and is using "usefulness" to refer to rejections under 35 U.S.C. § 112, first paragraph. This is made evident in the continuing text in *Brana*, which explains the correlation between 35 U.S.C. §§ 101 and 112, first paragraph. The Federal Circuit concluded:

> FDA approval, however, is not a prerequisite for finding a compound useful within the meaning of the patent laws. Usefulness in patent law, and in particular in the context of pharmaceutical inventions, necessarily includes the expectation of further research and development. The stage at which an invention in this field becomes useful is well before it is ready to be administered to humans. Were we to require Phase II testing in order to prove utility, the associated costs would prevent many companies from obtaining patent protection on promising new inventions, thereby eliminating an incentive to pursue, through research and development, potential cures in many crucial areas such as the treatment of cancer.

Brana at 1442-1443, citations omitted, emphasis added.

It is important to note that it has been clearly established that a statement of utility in a specification must be accepted absent reasons why one skilled in the art would have reason to doubt the objective truth of such statement. *In re Langer*, 503 F.2d 1380, 1391, 183 USPQ 288, 297 (CCPA, 1974; "*Langer*"); *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA, 1971). As clearly set forth in *Langer*:

> As a matter of Patent Office practice, a specification which contains a disclosure of utility which corresponds in scope to the subject matter sought to be patented must be taken as sufficient to satisfy the utility requirement of § 101 for the entire claimed subject matter unless there is a reason for one skilled in the art to question the objective truth of the statement of utility or its scope.

Langer at 297, emphasis in original. As set forth in the MPEP, "Office personnel must provide evidence sufficient to show that the statement of asserted utility would be considered 'false' by a person of ordinary skill in the art" (MPEP, Eighth Edition at 2100-40, emphasis added). Absent such evidence from the Examiner, as the skilled artisan would readily understand that the present polymorphic markers have utility in forensic analysis, the present claims clearly meet the requirements of 35 U.S.C. § 101.

Furthermore, Applicants point out that the present invention has a number of other patentable utilities, for example the utility of tracking expression of the presently claimed sequence. The specification details, at least at page 7, lines 4-6, that the present nucleotide sequences have utility in assessing gene expression patterns using high-throughput DNA chips. Such "DNA chips" clearly have utility, as evidenced by hundreds of issued U.S. Patents, as exemplified by U.S. Patent Nos. 5,445,934, 5,556,752, 5,744,305 (**Exhibits E-G**; submitted with the Information Disclosure Statement filed on April 18, 2002), and U.S. Patent Nos. 5,837,832, 6,156,501 and 6,261,776 (**Exhibits H-J**;

copies of issued U.S. Patents not provided pursuant to requests from the USPTO). As the present sequences are specific markers of human chromosome 7 (see below), and such specific markers are targets for the discovery of drugs that are associated with human disease, those of skill in the art would instantly recognize that the present nucleotide sequences would be an ideal, novel candidate for assessing gene expression using such DNA chips. Given the widespread utility of such "gene chip" methods using *public domain* gene sequence information, there can be little doubt that the use of the presently described *novel* sequences would have great utility in such DNA chip applications. Clearly, compositions that enhance the utility of such DNA chips, such as the presently claimed nucleotide sequences, must in themselves be useful.

Evidence of the "real world" substantial utility of the present invention is further provided by the fact that there is an entire industry established based on the use of gene sequences or fragments thereof in a gene chip format. Perhaps the most notable gene chip company is Affymetrix. However, there are many companies which have, at one time or another, concentrated on the use of gene sequences or fragments, in gene chip and non-gene chip formats, for example: Gene Logic, ABI-Perkin-Elmer, HySeq and Incyte. In addition, one such company (Rosetta Inpharmatics) was viewed to have such "real world" value that it was acquired by large a pharmaceutical company (Merck) for significant sums of money (net equity value of the transaction was $620 million). The "real world" substantial industrial utility of gene sequences or fragments would, therefore, appear to be widespread and well established. Clearly, persons of skill in the art, as well as venture capitalists and investors, readily recognize the utility, both scientific and commercial, of genomic data in general, and specifically human genomic data. Billions of dollars have been invested in the human genome project, resulting in useful genomic data (see, *e.g.*, Venter *et al.*, *Science* **291**:1304, 2001; **Exhibit K**). The results have been a stunning success as the utility of human genomic data has been widely recognized as a great gift to humanity (see, *e.g.*, Jasny and Kennedy, *Science* **291**:1153, 2001; **Exhibit L**). Clearly, the usefulness of human genomic data, such as the presently claimed nucleic acid molecules, is substantial and credible (worthy of billions of dollars and the creation of numerous companies focused on such information) and well-established (the utility of human genomic information has been clearly understood for many years). Thus, the present sequence clearly meets the requirements of 35 U.S.C. § 101.

Applicants respectfully point out that only expressed polynucleotide sequences can be used to track gene expression, not just any polynucleotide sequence. Furthermore, expression profiling does not even require a knowledge of the function of the particular nucleic acid on the chip - rather the gene

chip indicates which DNA fragments are expressed at greater or lesser levels in two or more particular tissue types, such as cancer cell lines and normal controls. Skilled artisans already have used and continue to use sequences such as Applicants in gene chip applications without "further experimentation". Once again, the requirements for a specific utility, which is the proper standard for utility under 35 U.S.C. § 101, should not be confused with that for a unique utility, which is clearly an improper standard (*Carl Zeiss Stiftung v. Renishaw PLC*, supra). Thus, the present sequence clearly meets the requirements of 35 U.S.C. § 101.

Applicants respectfully point out that only 2-4% of all nucleotide sequences are expressed. Therefore, the question of whether the asserted utility is "specific", as opposed to "generic", has once again been laid to rest. Applicants note that the "generic" class of the invention cannot be redefined to include only those nucleic acids that are expressed in order to support an allegation that the claimed nucleic acids lack a patentable utility. Such an allegation would be completely improper and in clear defiance of established case law, and would therefore in no way whatsoever be sufficient to overcome Applicants' assertion of utility. Therefore the present claims are clearly in compliance with 35 U.S.C. § 101.

As yet a further example of the utility of the presently claimed polynucleotide, as described in the specification at least at page 3, lines 2-5, the present nucleotide sequence has a specific utility in "identification of protein coding sequence, and mapping a unique gene to a particular chromosome". The specification, at page 3, lines 7-8, details that the gene encoding SEQ ID NO:4 is "encoded on human chromosome[] 7". This is confirmed by the fact that SEQ ID NO:4 can be used to map the two coding exons on human chromosome 7 (present within GenBank Accession Number AC006001, which is a genomic clone from human chromosome 7; alignment and the first page of the GenBank report are provided in **Exhibit M**). Clearly, the present polynucleotide provides exquisite specificity in localizing the specific region of human chromosome 7 that contains the gene encoding the given polynucleotide, a utility not shared by virtually any other nucleic acid sequences. In fact, it is this specificity that makes this particular sequence so useful. Early gene mapping techniques relied on methods such as Giemsa staining to identify regions of chromosomes. However, such techniques produced genetic maps with a resolution of only 5 to 10 megabases, far too low to be of much help in identifying specific genes involved in disease. The skilled artisan readily appreciates the significant benefit afforded by markers that map a specific locus of the human genome, such as the present nucleic acid sequence. For further evidence in support of the Applicants' position, the Examiner is requested

to review, for example, section 3 of Venter *et al.* (*supra*, at pp. 1317-1321, including Fig. 11 at pp.1324-1325; see **Exhibit K**), which demonstrates the significance of expressed sequence information in the structural analysis of genomic data. The presently claimed polynucleotide sequence defines a biologically validated sequence that provides a unique and specific resource for mapping the genome essentially as described in the Venter *et al.* article. Thus, the present claims clearly meet the requirements of 35 U.S.C. § 101.

Applicants once again respectfully remind the Examiner that only a minor percentage (2-4%) of the genome actually encodes exons, which in-turn encode amino acid sequences. Equally significant is that the claimed polynucleotide sequence defines how the encoded exons are actually spliced together to produce an active transcript (*i.e.*, the described sequences are useful for functionally defining exon splice-junctions). The specification details that the claimed sequences "identify biologically verified exon splice junctions, as opposed to splice junctions that may have been bioinformatically predicted from genomic sequence alone" (the specification at page 3, lines 10-12). The specification also details that "sequences derived from regions adjacent to the intron/exon boundaries of the human gene can be used to design primers for use in amplification assays to detect mutations within the exons, introns, splice sites (*e.g.*, splice acceptor and/or donor sites), *etc.*, that can be used in diagnostics and pharmacogenomics" (specification at page 12, lines 14-19). Applicants respectfully submit that the practical scientific value of biologically validated, expressed, spliced, and polyadenylated mRNA sequences is readily apparent to those skilled in the relevant biological and biochemical arts. Thus, the present sequence clearly meets the requirements of 35 U.S.C. § 101.

Once again, Applicants point out that only expressed sequences can be used in the identification of coding sequence, not just any nucleic acid. Applicants reiterate that the requirements of a specific utility, which is the proper standard for utility under 35 U.S.C. § 101, should not be confused with the requirement for a unique utility, which is clearly an improper standard (*Carl Zeiss Stiftung v. Renishaw PLC, supra*). The fact that a small number of other nucleotide sequences could be used to map the protein coding regions in this specific region of chromosome 7 does not mean that the use of Applicants' sequence to map the protein coding regions of chromosome 7 is not a specific utility. Once again, the question of whether or not other nucleic acid sequences can be so used is completely irrelevant to the present utility inquiry. The only relevant question in regard to meeting the standards of 35 U.S.C. § 101 is whether every nucleic acid can be so used - and the clear answer to this question is once again an emphatic no. Applicants respectfully point out that the broad class of any nucleic acid

molecule cannot be narrowed to include only polynucleotide sequences that are expressed in order to support an allegation that the claimed nucleic acids lack a patentable utility, which Applicants point out once again would be improper under the law as well as the policy of the USPTO. Thus, the present claims clearly meet the requirements of 35 U.S.C. § 101.

Rather, as set forth by the Federal Circuit, "(t)he threshold of utility is not high: An invention is 'useful' under section 101 if it is capable of providing some identifiable benefit." *Juicy Whip Inc. v. Orange Bang Inc.*, 51 USPQ2d 1700 (Fed. Cir. 1999) (citing *Brenner v. Manson*, 383 U.S. 519, 534 (1966)). Additionally, the Federal Circuit has stated that "(t)o violate § 101 the claimed device must be totally incapable of achieving a useful result." *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1571 (Fed. Cir. 1992), emphasis added. *Cross v. Iizuka* (224 USPQ 739 (Fed. Cir. 1985); "*Cross*") states "any utility of the claimed compounds is sufficient to satisfy 35 U.S.C. § 101". *Cross* at 748, emphasis added. Indeed, as discussed in Section II, above, the Federal Circuit recently emphatically confirmed that "anything under the sun that is made by man" is patentable (*State Street Bank & Trust Co. v. Signature Financial Group Inc.*, *supra*, citing the U.S. Supreme Court's decision in *Diamond vs. Chakrabarty*, *supra*).

Finally, the requirements set forth in the Action for compliance with 35 U.S.C. § 101 do not comply with the requirements set forth by the Patent and Trademark Office ("the PTO") itself for compliance with 35 U.S.C. § 101. While Applicants are well aware of the new Utility Guidelines set forth by the USPTO, Applicants respectfully point out that the current rules and regulations regarding the examination of patent applications is and always has been the patent laws as set forth in 35 U.S.C. and the patent rules as set forth in 37 C.F.R., not the Manual of Patent Examination Procedure or particular guidelines for patent examination set forth by the USPTO. Furthermore, it is the job of the judiciary, not the USPTO, to interpret these laws and rules. Applicants are unaware of any significant recent changes in either 35 U.S.C. § 101, or in the interpretation of 35 U.S.C. § 101 by the Supreme Court or the Federal Circuit that is in keeping with the new Utility Guidelines set forth by the USPTO. This is underscored by numerous patents that have been issued over the years that claim nucleic acid fragments that do not comply with the new Utility Guidelines. As examples of such issued U.S. Patents, the Examiner is invited to review U.S. Patent Nos. 5,817,479, 5,654,173, and 5,552,281 (each of which claims short polynucleotides; **Exhibits N-P**; copies of issued U.S. Patents not provided pursuant to requests from the USPTO), and recently issued U.S. Patent No. 6,340,583 (which includes no working examples; **Exhibit Q**; copies of issued U.S. Patents not provided pursuant to requests from

the USPTO), none of which contain examples of the "real-world" utilities that the Examiner seems to be requiring. As issued U.S. Patents are presumed to meet all of the requirements for patentability, including 35 U.S.C. §§ 101 and 112, first paragraph (see Section IV, below), Applicants submit that the present polynucleotides must also meet the requirements of 35 U.S.C. § 101. While Applicants understand that each application is examined on its own merits, Applicants are unaware of any changes to 35 U.S.C. § 101, or in the interpretation of 35 U.S.C. § 101 by the Supreme Court or the Federal Circuit, since the issuance of these patents that render the subject matter claimed in these patents, which is similar to the subject matter in question in the present application, as suddenly non-statutory or failing to meet the requirements of 35 U.S.C. § 101. Thus, holding Applicants to a different standard of utility would be arbitrary and capricious, and, like other clear violations of due process, cannot stand.

For each of the foregoing reasons, Applicants submit that as the presently claimed nucleic acid molecules have been shown to have a substantial, specific, credible and well-established utility, the rejection of claims 2-4 and 8-10 under 35 U.S.C. § 101 has been overcome, and request that the rejection be withdrawn.

IV. Rejection of Claims 2-4 and 8-10 Under 35 U.S.C. § 112, First Paragraph

The Action next rejects claims 2-4 and 8-10 under 35 U.S.C. § 112, first paragraph, since allegedly one skilled in the art would not know how to use the invention, as the invention allegedly is not supported by a specific, substantial, and credible utility or a well-established utility. Applicants respectfully traverse.

Applicants submit that as claims 2-4 and 8-10 have been shown to have "a specific, substantial, and credible utility", as detailed in section III above, the present rejection of claims 2-4 and 8-10 under 35 U.S.C. § 112, first paragraph, cannot stand.

Applicants therefore request that the rejection of claims 2-4 and 8-10 under 35 U.S.C. § 112, first paragraph, be withdrawn.

V. Conclusion

The present document is a full and complete response to the Action. In conclusion, Applicants submit that, in light of the foregoing remarks, the present case is in condition for allowance, and such favorable action is respectfully requested. Should Examiner Hayes have any questions or comments, or believe that certain amendments of the claims might serve to improve their clarity, a telephone call

to the undersigned Applicants' representative is earnestly solicited.

Respectfully submitted,

December 28, 2004
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